FCC RADIO TEST REPORT
FCC ID: 2BLHD-AF930

Product:	Wireless POS
Trade Mark:	N/A
Model No.:	AF930
Family Model:	N/A
Report No.:	S24062804302005
Issue Date:	Nov. 01, 2024

Prepared for

Beijing Shenzhou Anfu Technology Co., Ltd

1102, Block A, Longyu center, Huilongguan,
Changping District, Beijing

Prepared by

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Website: http://www.ntek.org.cn

TEST RESULT CERTIFICATION

Applicant's name	:	Beijing Shenzhou Anfu Technology Co., Ltd
Address	:	1102, Block A, Longyu center, Huilongguan, Changping District, Beijing
Manufacturer's Name	:	Beijing Shenzhou Anfu Technology Co., Ltd
Address	:	1102, Block A, Longyu center, Huilongguan, Changping District, Beijing

Product description

Product name	:	Wireless POS
Trade Mark	:	N/A
Model and/or type reference	:	AF930
Family Model	:	N/A
Test Sample Number		S240628043002
Standards	:	FCC Part 15.407
Test procedure		ANSI C63.10-2013 KDB 789033 D02 General UNII Test Procedures New Rules v02r01

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test .....

Date (s) of performance of tests ..... Jun. 29, 2024 ~ Nov. 01, 2024

Date of Issue ..... Nov. 01, 2024

Test Result ..... **Pass**

Prepared By :	Mary Hu	(Project Engineer)
Reviewed By :	Aaron Cheng	(Supervisor)
Approved By :	Alex Li	(Manager)

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Revision History

Report No.	Version	Description	Issued Date
S24062804302005	Rev.01	Initial issue of report	Nov. 01, 2024

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.407) , Subpart E			
Standard Section	Test Item	Judgment	Remark
15.207	AC Power Line Conducted Emissions	PASS	
15.209(a), 15.407 (b)(1) 15.407 (b)(4)	Spurious Radiated Emissions	PASS	
15.407 (a)(1) 15.407 (a)(3)	26 dB and 99% Emission Bandwidth	**PASS	
15.407(e)	Minimum 6 dB bandwidth	**PASS	
15.407 (a)(1) 15.407 (a)(3)	Maximum Conducted Output Power	**PASS	
15.407(b)(1) 15.407(b)(4)	Band Edge	**PASS	
15.407 (a)(1) 15.407 (a)(3)	Power Spectral Density	**PASS	
15.407(b)	Spurious Emissions at Antenna Terminals	**PASS	
15.407(g)	Frequency Stability Measurement	**PASS	
15.203	Antenna Requirement	PASS	
15.407(c)	Automatically discontinue transmission	**PASS	(Note 3)

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

(2) This device operates with a duty cycle greater than 99%

(3) The product is a client device, and the data transmission is limited by the AP. When the information to be sent is missing or the operation fails, the device will automatically stop sending and directly connect to the AP correctly again.

(4) ** The conducted Test data please refer to the report: S23033100205004 under the WWAN module Z400-H FCC ID: 2A9FT-Z400-H.

1.1 FACILITIES AND ACCREDITATIONS

FACILITIES

All measurement facilities used to collect the measurement data are located at
1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District Shenzhen, Guangdong, China
The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.10 and CISPR Publication 22.

LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

CNAS-Lab.	:	The Certificate Registration Number is L5516.
IC-Registration		The Certificate Registration Number is 9270A.
		CAB identifier:CN0074
FCC- Accredited		Test Firm Registration Number: 463705.
		Designation Number: CN1184
A2LA-Lab.		The Certificate Registration Number is 4298.01
Name of Firm	:	Shenzhen NTEK Testing Technology Co., Ltd.
Site Location	:	1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District Shenzhen, Guangdong, China

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	±3.1dB
2	RF power, conducted,PSD	±0.9dB
3	Spurious emissions, conducted	±2.2dB
4	All emissions, radiated(30MHz~1GHz)	±2.64dB
5	All emissions, radiated(<1G)	±5.2dB
6	All emissions, radiated(>1G)	±5.1dB
7	Temperature	±0.5°C
8	Humidity	±2%
9	All emissions, radiated(9KHz~30MHz)	±6dB
10	Humidity	±2%
11	Radio Frequency	±0.2ppm
12	Occupied bandwidth	±3.7%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless POS
Trade Mark	N/A
Model Name	AF930
Family Model	N/A
Model Difference	N/A
FCC ID	2BLHD-AF930
Product Description	<table><tr><td>Mode Supported</td><td>☒802.11a ☒802.11n(HT20) ☒802.11n(HT40) ☒802.11ac(HT20) ☒802.11ac(HT40) ☒802.11ac(HT80)</td></tr><tr><td>Data Rate</td><td>802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-MCS9</td></tr><tr><td>Modulation</td><td>OFDM with BPSK/QPSK/16QAM/64QAM</td></tr><tr><td>Operating Frequency Range</td><td>☒ U-NII-1: 5150 MHz ~5250MHz ☒ U-NII-3: 5725 MHz ~5850 MHz</td></tr><tr><td>Function:</td><td>☐Outdoor AP ☐Indoor AP ☐Fixed P2P ☒Client</td></tr><tr><td>DFS type:</td><td>☐master devices ☐Slave devices with radar detection ☒Slave devices without radar detection</td></tr><tr><td>Support TPC</td><td>☐YES ☒NO</td></tr><tr><td>Antenna Type</td><td>FPC Antenna</td></tr><tr><td>Antenna Gain</td><td>3.22dBi</td></tr></table> Based on the application, features, or specification exhibited in User's Manual, More details of EUT technical specification, please refer to the User's Manual.
Adapter	N/A
Battery	DC 3.7V,5600mAh, 20.72Wh
Power supply	DC 3.7V from battery or DC 5V from type-C port
Connecting I/O Port(s)	Please refer to the User's Manual
Hardware version	AF930_MAIN_V2.0_1001
Software version	SZANFU_AF930_V1.14_00_20240102_userdebug

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Frequency and Channel list:

Band	20MHz		40MHz		80MHz	
	Channel	Frequency	Channel	Frequency	Channel	Frequency
U-NII-1	36	5180 MHz	38	5190 MHz	42	5210 MHz
	40	5200 MHz	46	5230 MHz	-	-
	44	5220 MHz				
	48	5240 MHz				
U-NII-3	149	5745 MHz	151	5755 MHz	155	5775 MHz
	153	5765 MHz	159	5795 MHz		
	157	5785 MHz				
	161	5805 MHz				
	165	5825 MHz				

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

For Radiated Emission	
Final Test Mode	Description
Mode 1	Normal Link Mode
Mode 2	802.11a / n 20 /ac 20 CH36/ CH40/ CH 48 802.11a / n 20 / ac 20 CH149/ CH157/ CH 165
Mode 3	802.11n40 / ac40 CH38/ CH 46 802.11n 40 / ac 40 CH 151 / CH 159
Mode 4	802.11ac80 CH 42 802.11ac 80 CH 155

For Conducted Emission	
Final Test Mode	Description
Mode 1	Normal Link Mode
Mode 2	802.11a / n 20 /ac 20 CH36/ CH40/ CH 48 802.11a / n 20 / ac 20 CH149/ CH157/ CH 165
Mode 3	802.11n40 / ac40 CH38/ CH 46 802.11n 40 / ac 40 CH 151 / CH 159
Mode 4	802.11ac80 CH 42 802.11ac 80 CH 155

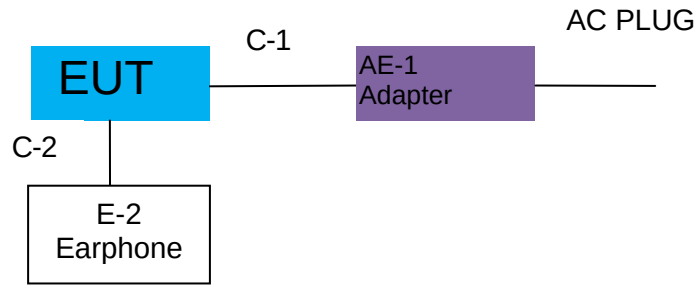
Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

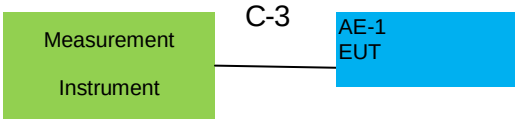
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

For AC Conducted Emission Mode



For Radiated Test Cases

For Conducted Test Cases



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Model/Type No.	Series No.	Note
AE-1	Adapter	N/A	N/A	Peripherals
E-2	Earphone	N/A	N/A	Peripherals
-	-	-	-	-
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	Type-C Cable	NO	NO	1.0m
C-2	Earphone Cable	NO	NO	1.2m
C-3	RF Cable	YES	NO	0.1m
-	-	-	-	-

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.
(4) “***” RF Cable is between the module and the antenna, that’s part of the EUT. Provided by the applicant.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation& Conducted Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	N9020A	MY53280244	2024.04.26	2025.04.25	1 year
2	Spectrum Analyzer	R&S	FSV40	101417	2024.04.26	2025.04.25	1 year
3	Test Receiver	R&S	ESPI7	101318	2024.03.12	2025.03.11	1 year
4	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2024.05.17	2027.05.16	3 year
5	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	586	2024.05.12	2025.05.11	1 year
6	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120 D	2816	2024.05.18	2027.05.17	3 year
7	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	803	2024.05.12	2027.05.11	3 year
8	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
9	Pre-Amplifier	EMC	EMC051835 SE	980246	2024.01.23	2025.01.22	1 year
10	Low Noise Amplifier	B&Z	BZ-P540-550 850-452727	16476-11729	2024.02.03	2025.02.02	1 year
11	Pre-Amplifier	Sonoma	310N	186604	2024.04.25	2025.04.24	1 year
12	Power sensor	Agilent	E9301A	US39212148	2024.04.25	2025.04.24	1 year
13	Filter	Micro-Tronics	BRM50716	G224	2024.04.26	2027.04.25	3 year
14	RF Control Unit	MWRFtest	MW100-RFCB	MW230608NTEK-43	N/A	N/A	N/A

Note: Each piece of equipment is scheduled for calibration once a year except the Aux Equipment & Test Cable which is scheduled for calibration every 2 or 3 years.

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRFtest	MTS 8310 2.4GHz/5GHz	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	Radiated Test
3	raditeq	RadiMation	2023.1.3	Radiated Test

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

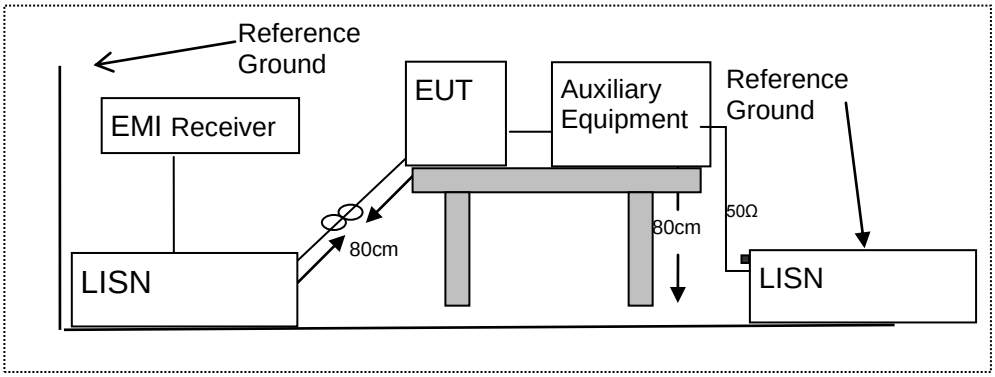
3.1.1 APPLICABLE STANDARD

According to FCC Part 15.207(a)

3.1.2 CONFORMANCE LIMIT

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5.0	56	46
5.0-30.0	60	50
Note: 1. *Decreases with the logarithm of the frequency 2. The lower limit shall apply at the transition frequencies 3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.		

3.1.3 TEST CONFIGURATION



3.1.4 TEST PROCEDURE

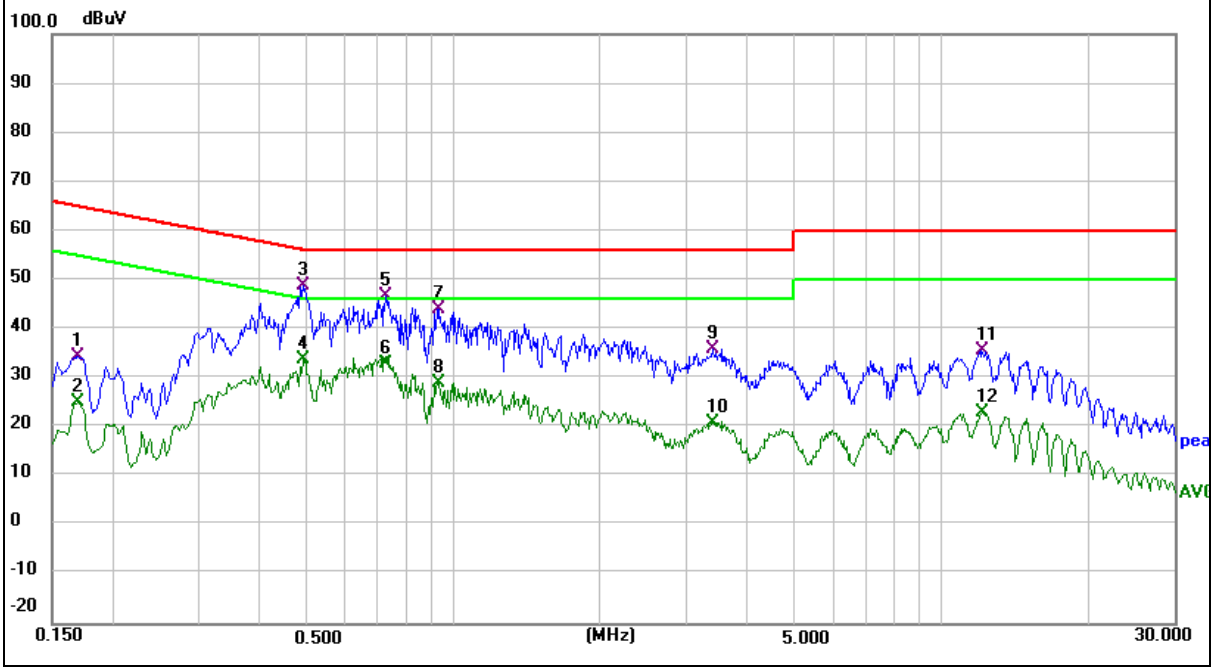
According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room.
2. The EUT was placed on a table which is 0.8m above ground plane.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. The frequency range from 150KHz to 30MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth(IF bandwidth=9KHz) with Maximum Hold Mode
9. For the actual test configuration, please refer to the related Item –EUT Test Photos.

EUT：	Wireless POS	Model Name ：	AF930
Temperature：	22 ℃	Relative Humidity：	57%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz	Test Mode：	Mode 1(5.2G)

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1700	24.41	9.97	34.38	64.96	-30.58	QP
0.1700	15.13	9.97	25.10	54.96	-29.86	AVG
0.4940	38.09	10.63	48.72	56.10	-7.38	QP
0.4940	23.28	10.63	33.91	46.10	-12.19	AVG
0.7260	35.57	11.11	46.68	56.00	-9.32	QP
0.7260	21.86	11.11	32.97	46.00	-13.03	AVG
0.9340	32.67	11.52	44.19	56.00	-11.81	QP
0.9340	17.68	11.52	29.20	46.00	-16.80	AVG
3.3860	26.32	9.67	35.99	56.00	-20.01	QP
3.3860	11.17	9.67	20.84	46.00	-25.16	AVG
12.1700	25.98	9.70	35.68	60.00	-24.32	QP
12.1700	13.30	9.70	23.00	50.00	-27.00	AVG

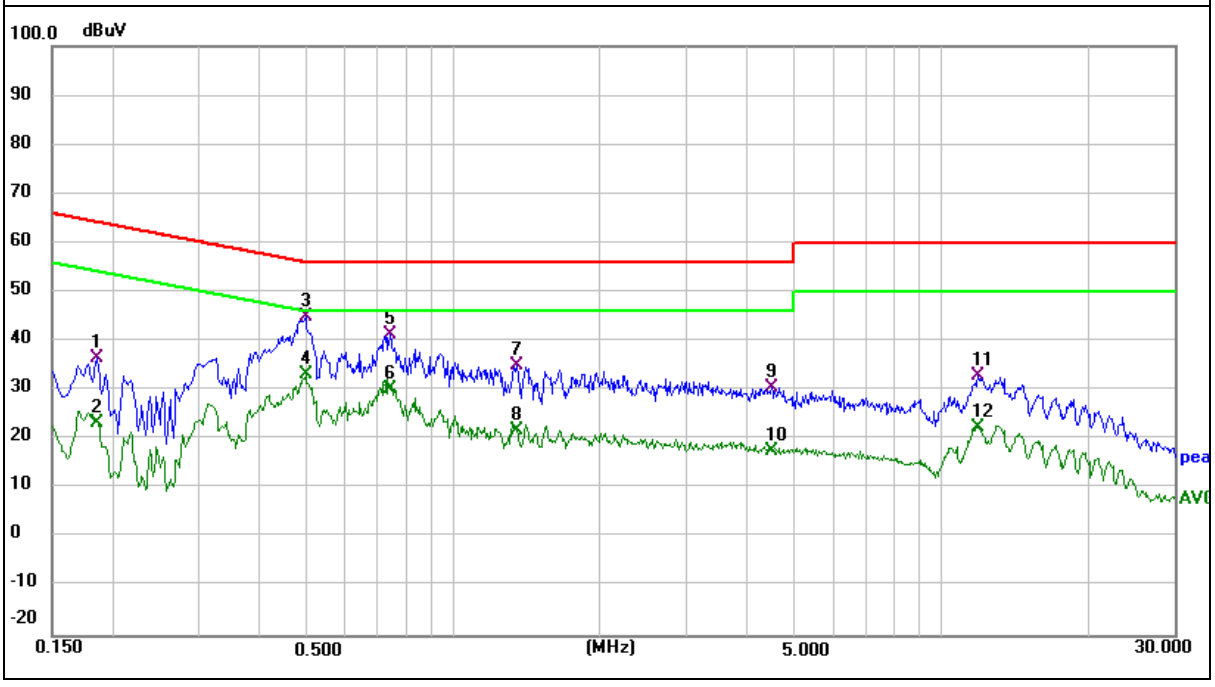
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	Wireless POS	Model Name ：	AF930
Temperature：	22℃	Relative Humidity：	57%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz	Test Mode：	Mode 1(5.2G)

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1860	26.43	10.01	36.44	64.21	-27.77	QP
0.1860	13.29	10.01	23.30	54.21	-30.91	AVG
0.4980	34.27	10.65	44.92	56.03	-11.11	QP
0.4980	22.74	10.65	33.39	46.03	-12.64	AVG
0.7420	30.10	11.13	41.23	56.00	-14.77	QP
0.7420	19.22	11.13	30.35	46.00	-15.65	AVG
1.3460	22.69	12.36	35.05	56.00	-20.95	QP
1.3460	9.55	12.36	21.91	46.00	-24.09	AVG
4.4940	21.02	9.67	30.69	56.00	-25.31	QP
4.4940	8.08	9.67	17.75	46.00	-28.25	AVG
11.8780	23.20	9.70	32.90	60.00	-27.10	QP
11.8780	12.65	9.70	22.35	50.00	-27.65	AVG

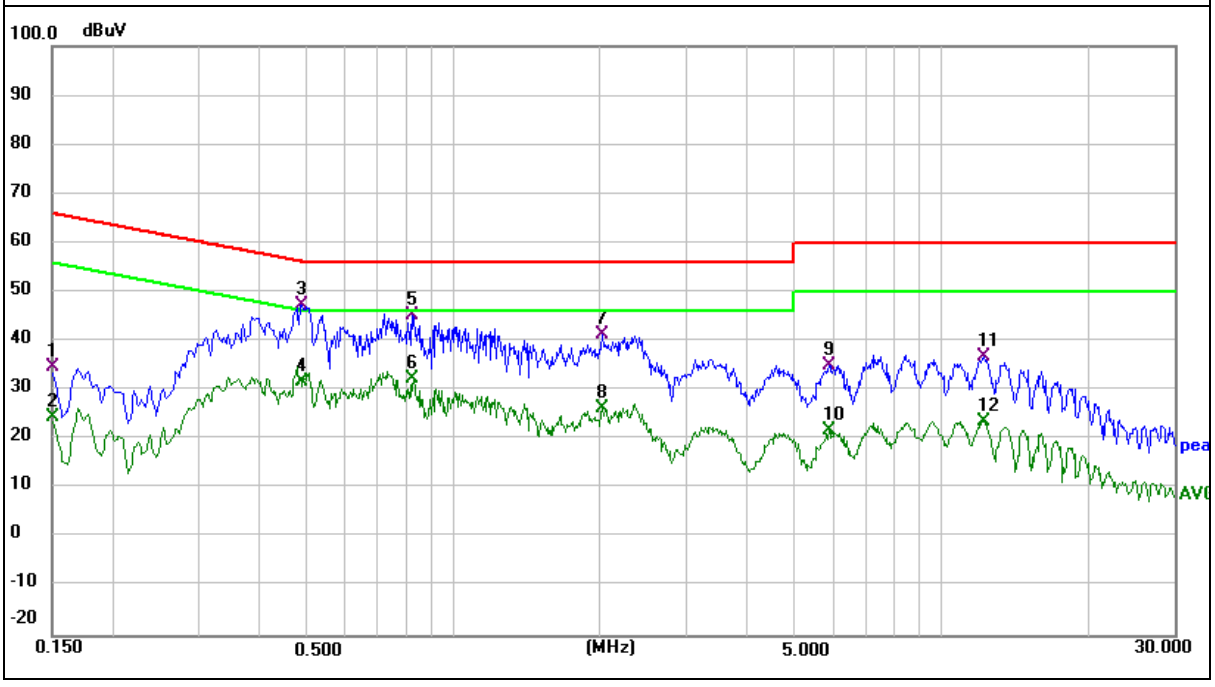
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	Wireless POS	Model Name ：	AF930
Temperature：	22 ℃	Relative Humidity：	57%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz	Test Mode：	Mode 1(5.8G)

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1500	24.73	9.93	34.66	66.00	-31.34	QP
0.1500	14.73	9.93	24.66	56.00	-31.34	AVG
0.4863	36.67	10.63	47.30	56.23	-8.93	QP
0.4863	21.20	10.63	31.83	46.23	-14.40	AVG
0.8220	34.00	11.30	45.30	56.00	-10.70	QP
0.8220	21.08	11.30	32.38	46.00	-13.62	AVG
2.0140	31.63	9.66	41.29	56.00	-14.71	QP
2.0140	16.76	9.66	26.42	46.00	-19.58	AVG
5.8820	25.47	9.68	35.15	60.00	-24.85	QP
5.8820	12.25	9.68	21.93	50.00	-28.07	AVG
12.1899	27.20	9.70	36.90	60.00	-23.10	QP
12.1899	14.01	9.70	23.71	50.00	-26.29	AVG

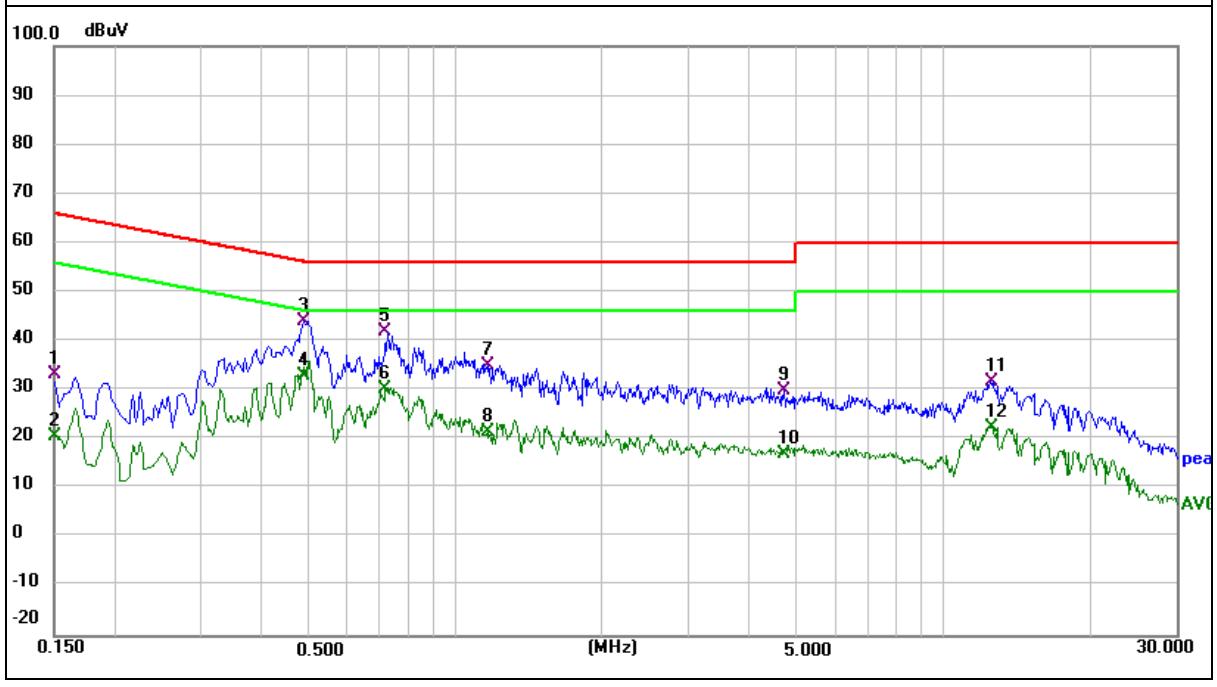
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	Wireless POS	Model Name ：	AF930
Temperature：	22℃	Relative Humidity：	57%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz	Test Mode：	Mode 1(5.8G)

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1500	23.34	9.93	33.27	66.00	-32.73	QP
0.1500	10.72	9.93	20.65	56.00	-35.35	AVG
0.4900	33.52	10.63	44.15	56.17	-12.02	QP
0.4900	22.32	10.63	32.95	46.17	-13.22	AVG
0.7180	30.97	11.09	42.06	56.00	-13.94	QP
0.7180	19.02	11.09	30.11	46.00	-15.89	AVG
1.1620	23.20	11.98	35.18	56.00	-20.82	QP
1.1620	9.68	11.98	21.66	46.00	-24.34	AVG
4.6979	20.17	9.67	29.84	56.00	-26.16	QP
4.6979	7.51	9.67	17.18	46.00	-28.82	AVG
12.5540	22.13	9.70	31.83	60.00	-28.17	QP
12.5540	12.74	9.70	22.44	50.00	-27.56	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 APPLICABLE STANDARD

According to FCC Part 15.407(b) and 15.209

3.2.2 CONFORMANCE LIMIT

According to FCC Part 15.407（b）(9)（10）: radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

According to FCC Part15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	13.36-13.41	322-335.4	3.6-4.4
0.495-0.505	16.42-16.423	399.9-410	4.5-5.15
2.1735-2.1905	16.69475-16.69525	608-614	5.35-5.46
4.125-4.128	16.80425-16.80475	960-1240	7.25-7.75
4.17725-4.17775	25.5-25.67	1300-1427	8.025-8.5
4.20725-4.20775	37.5-38.25	1435-1626.5	9.0-9.2
6.215-6.218	73-74.6	1645.5-1646.5	9.3-9.5
6.26775-6.26825	74.8-75.2	1660-1710	10.6-12.7
6.31175-6.31225	108-121.94	1718.8-1722.2	13.25-13.4
8.291-8.294	123-138	2200-2300	14.47-14.5
8.362-8.366	149.9-150.05	2310-2390	15.35-16.2
8.37625-8.38675	156.52475-156.52525	2483.5-2500	17.7-21.4
8.41425-8.41475	156.7-156.9	2690-2900	22.01-23.12
12.29-12.293	162.0125-167.17	3260-3267	23.6-24.0
12.51975-12.52025	167.72-173.2	3332-3339	31.2-31.8
12.57675-12.57725	240-285	3345.8-3358	36.43-36.5
			(2)

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	24000/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Frequency(MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

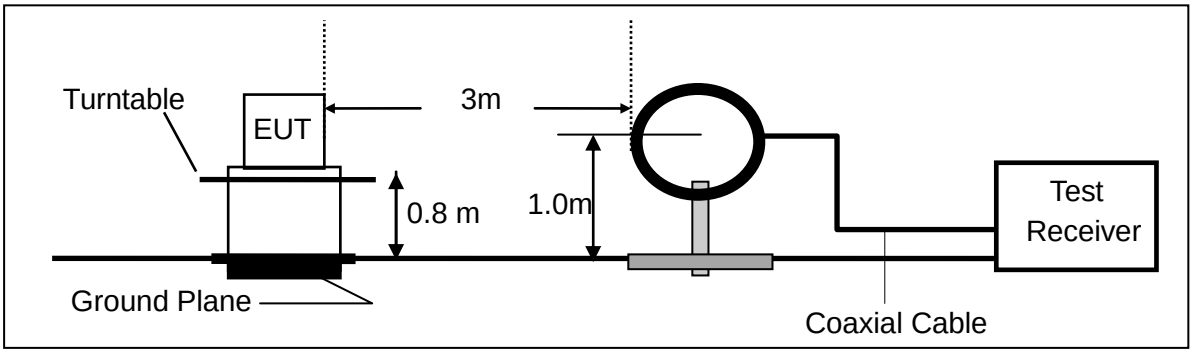
Remark :1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. For Frequency 9kHz~30MHz:
Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.
For Frequency above 30MHz:
Distance extrapolation factor =20log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

3.2.3 MEASURING INSTRUMENTS

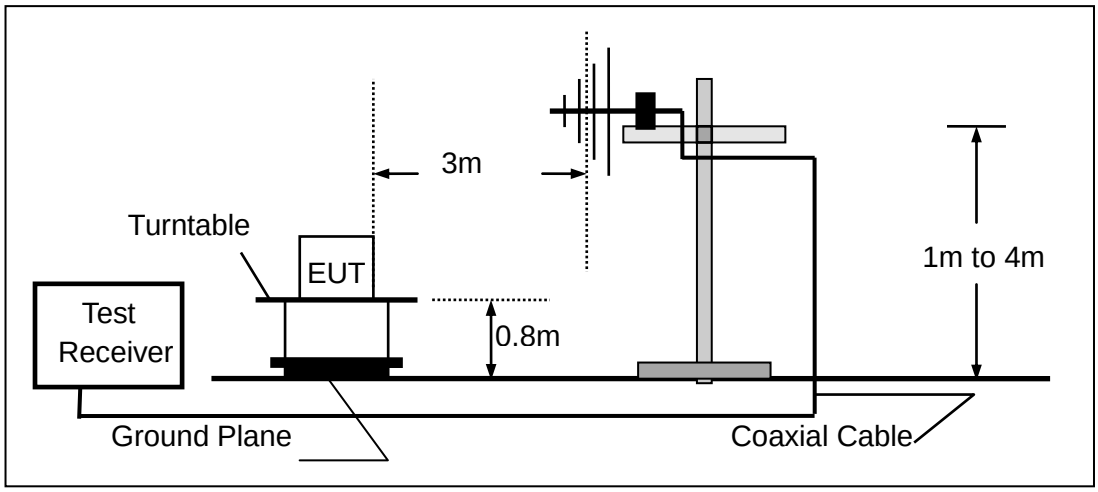
The Measuring equipment is listed in the section 2.2 of this test report.

3.2.4 TEST CONFIGURATION

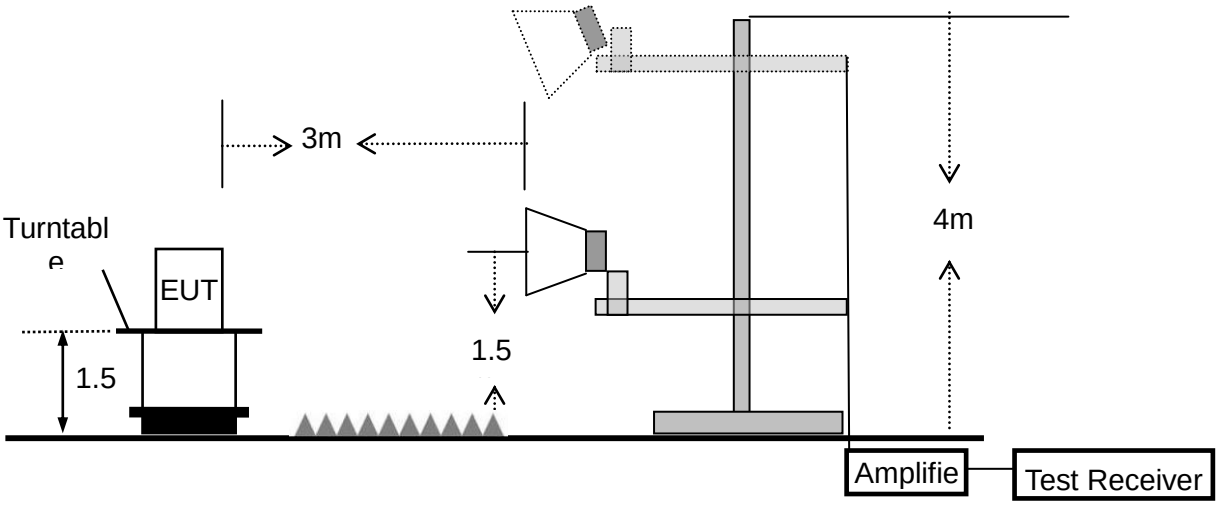
(a) For radiated emissions below 30MHz



(b) For radiated emissions from 30MHz to 1000MHz



(c) For radiated emissions above 1000MHz



3.2.5 TEST PROCEDURE

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.
This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT.
Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 3 MHz for Peak, 1 MHz / 3MHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Average	1 MHz	3 MHz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where RBWCF [dB] =10*lg(100 [kHz]/narrower RBW [kHz]). , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

3.2.6 TEST RESULTS (9KHZ – 30 MHZ)

EUT：	Wireless POS	Model Name ：	AF930
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 1/2/3	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

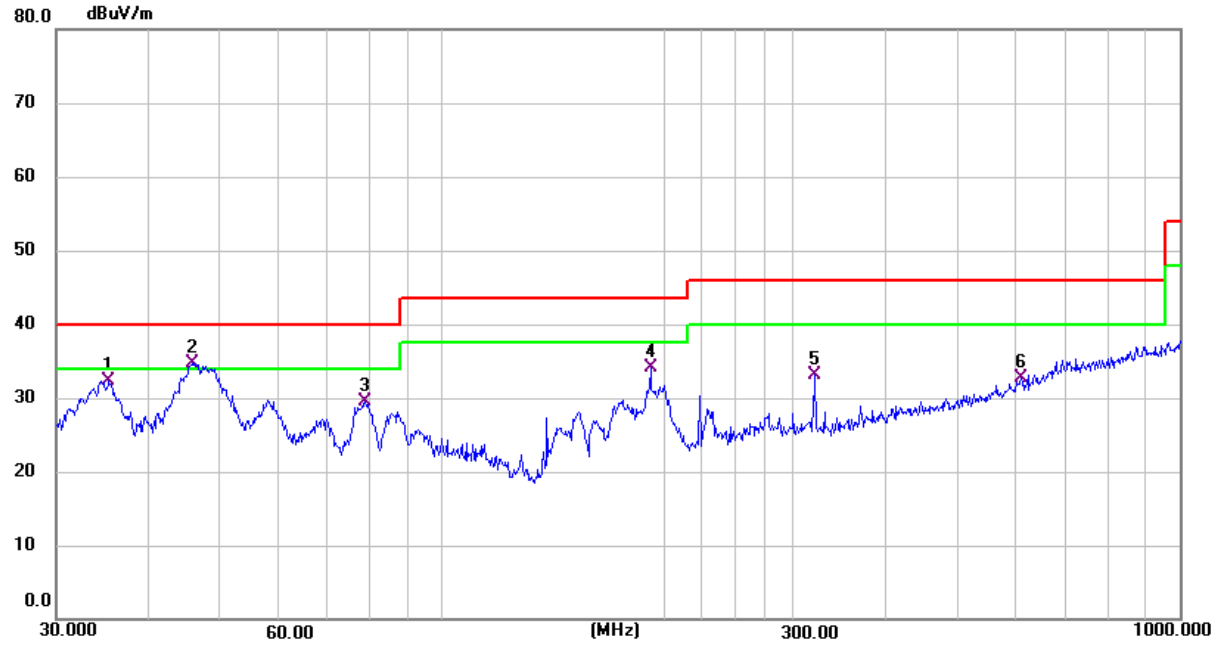
3.2.7 TEST RESULTS (30MHZ – 1GHZ)

EUT：	Wireless POS	Model Name ：	AF930
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX(5.2G)- 802.11a (Mid CH)		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	35.3750	50.39	-18.10	32.29	40.00	-7.71	QP
V	46.0162	15.24	19.52	34.76	40.00	-5.24	QP
V	78.6887	15.79	13.73	29.52	40.00	-10.48	QP
V	191.7450	17.03	17.16	34.19	43.50	-9.31	QP
V	319.9370	12.39	20.67	33.06	46.00	-12.94	QP
V	609.9217	6.53	26.12	32.65	46.00	-13.35	QP

Remark:

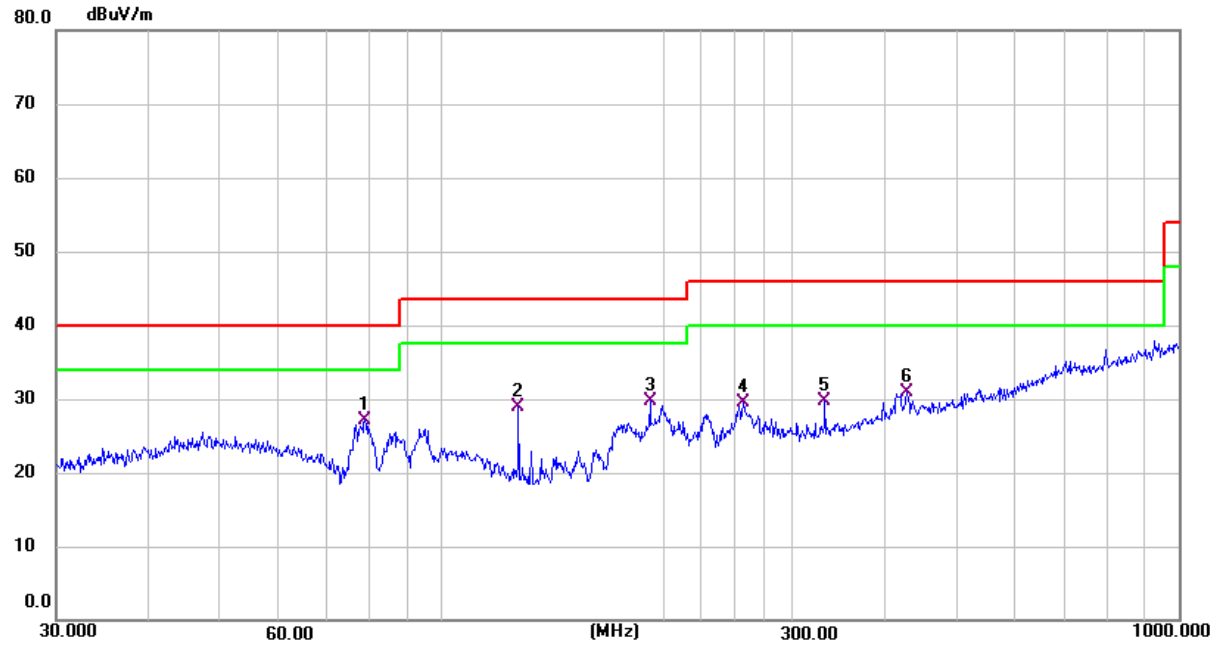
Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	78.6888	13.31	13.73	27.04	40.00	-12.96	QP
H	127.2176	13.93	14.90	28.83	43.50	-14.67	QP
H	191.7450	12.63	17.16	29.79	43.50	-13.71	QP
H	256.5211	10.11	19.37	29.48	46.00	-16.52	QP
H	331.3546	8.70	21.05	29.75	46.00	-16.25	QP
H	428.0193	7.67	23.15	30.82	46.00	-15.18	QP

Remark:

Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



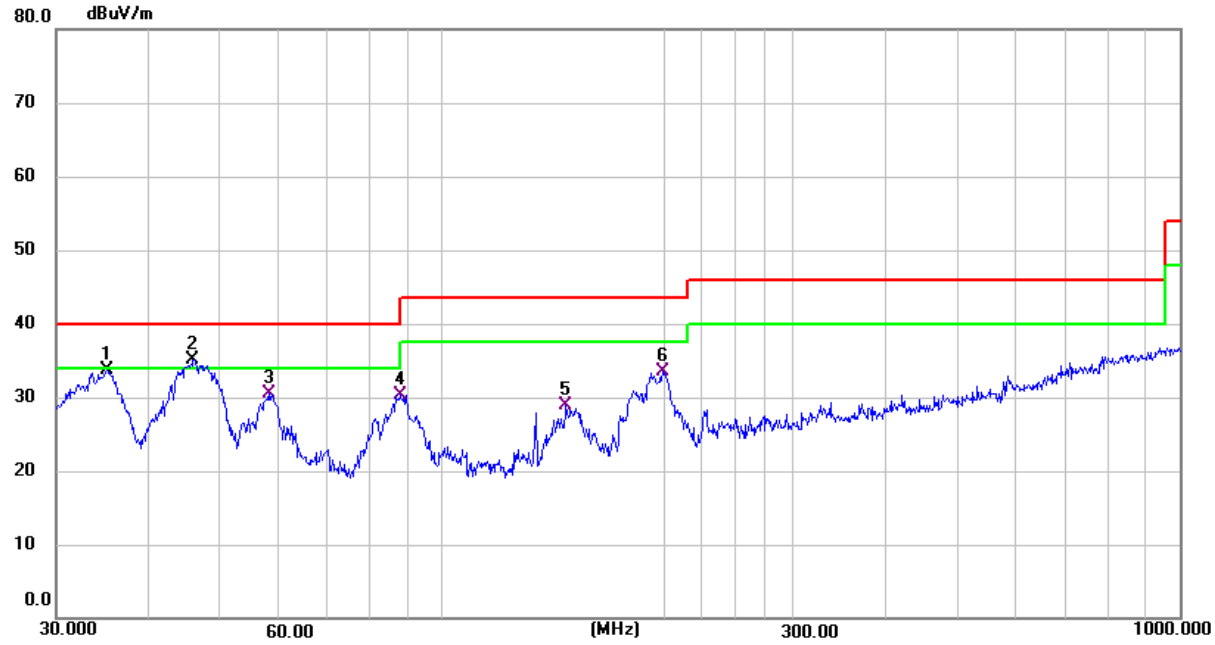
Note: All modes have been tested, just the worst mode has been recorded in the report. “802.11a” mode is the worst mode. When PK value is lower than the Average value limit, average don't record.

EUT：	Wireless POS	Model Name ：	AF930
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX(5.8G)		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	35.1276	51.53	-17.92	33.61	40.00	-6.39	peak
V	46.1779	15.64	19.52	35.16	40.00	-4.84	peak
V	58.2030	11.73	18.85	30.58	40.00	-9.42	QP
V	87.7245	15.45	14.95	30.40	40.00	-9.60	QP
V	147.4036	14.52	14.37	28.89	43.50	-14.61	QP
V	199.2855	15.60	17.98	33.58	43.50	-9.92	QP

Remark:

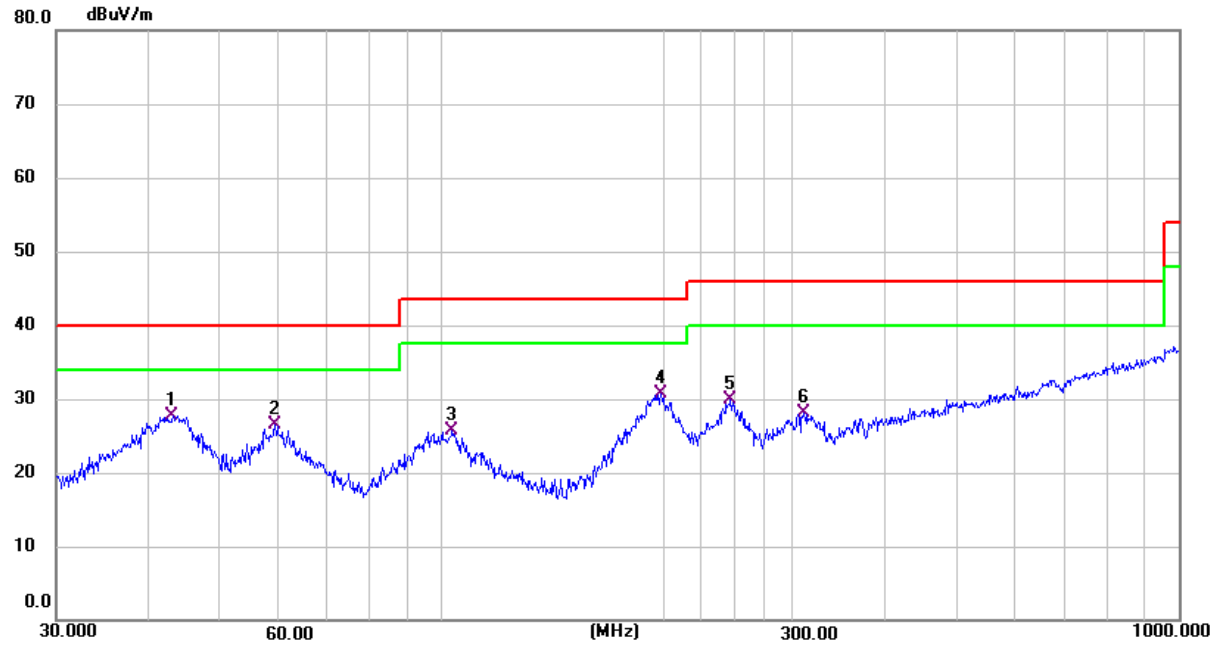
Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	43.2014	51.69	-23.97	27.72	40.00	-12.28	QP
H	59.4405	7.70	18.74	26.44	40.00	-13.56	QP
H	103.4419	7.89	17.87	25.76	43.50	-17.74	QP
H	198.5880	12.75	17.93	30.68	43.50	-12.82	QP
H	246.8150	10.79	19.16	29.95	46.00	-16.05	QP
H	309.9977	7.63	20.46	28.09	46.00	-17.91	QP

Remark:

Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Note: All modes have been tested, just the worst mode has been recorded in the report.

3.2.8 TEST RESULTS (1GHz-18GHz)

EUT：	Wireless POS	Model Name. ：	AF930
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage：	DC 3.7V
Test Mode ：	TX(5.2G) - 802.11a		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	3694.41	61.28	5.94	35.40	44.00	58.62	74.00	-15.38	Pk
Vertical	3694.58	41.68	5.94	35.40	44.00	39.02	54.00	-14.98	AV
Vertical	10360.45	58.76	8.46	39.75	44.50	62.47	68.20	-5.73	Pk
Vertical	15540.52	60.54	10.12	38.80	44.10	65.36	74.00	-8.64	Pk
Vertical	15540.47	39.89	10.12	38.80	42.70	46.11	54.00	-7.89	AV
Horizontal	3713.55	62.85	5.94	35.18	44.00	59.97	74.00	-14.03	Pk
Horizontal	3713.30	43.52	5.94	35.18	44.00	40.64	54.00	-13.36	AV
Horizontal	10360.84	58.77	8.46	38.71	44.50	61.44	68.20	-6.76	Pk
Horizontal	15540.91	57.02	10.12	38.38	44.10	61.42	74.00	-12.58	Pk
Horizontal	15540.82	40.98	10.12	38.38	44.10	45.38	54.00	-8.62	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	3624.50	58.61	6.48	36.35	44.05	57.39	74.00	-16.61	Pk
Vertical	3624.39	43.19	6.48	36.35	44.05	41.97	54.00	-12.03	AV
Vertical	10400.50	59.64	8.47	37.88	44.51	61.48	68.20	-6.72	Pk
Vertical	15600.47	59.93	10.12	38.80	44.10	64.75	74.00	-9.25	Pk
Vertical	15600.54	39.09	10.12	38.80	42.70	45.31	54.00	-8.69	AV
Horizontal	4202.52	58.37	6.48	36.37	44.05	57.17	74.00	-16.83	Pk
Horizontal	4202.40	44.29	6.48	36.37	44.05	43.09	54.00	-10.91	AV
Horizontal	10400.44	60.84	8.47	38.64	44.50	63.45	68.20	-4.75	Pk
Horizontal	15600.99	59.90	10.12	38.38	44.10	64.30	74.00	-9.70	Pk
Horizontal	15600.99	41.23	10.12	38.38	44.10	45.63	54.00	-8.37	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4597.93	63.65	7.10	37.24	43.50	64.49	74.00	-9.51	Pk
Vertical	4597.93	43.16	7.10	37.24	43.50	44.00	54.00	-10.00	AV
Vertical	10480.47	60.16	8.46	37.68	44.50	61.80	68.20	-6.40	Pk
Vertical	15720.55	61.72	10.12	38.80	44.10	66.54	74.00	-7.46	Pk
Vertical	15720.48	40.02	10.12	38.80	42.70	46.24	54.00	-7.76	AV
Horizontal	4589.81	61.31	7.10	37.24	43.50	62.15	74.00	-11.85	Pk
Horizontal	4589.63	41.02	7.10	37.24	43.50	41.86	54.00	-12.14	AV
Horizontal	10480.90	61.88	8.46	38.57	44.50	64.41	68.20	-3.79	Pk
Horizontal	15720.47	59.73	10.12	38.38	44.10	64.13	74.00	-9.87	Pk
Horizontal	15720.44	43.47	10.12	38.38	44.10	47.87	54.00	-6.13	AV

Note:"802.11a" mode is the worst mode.

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported. Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

EUT：	Wireless POS	Model Name. ：	AF930
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage：	DC 3.7V
Test Mode ：	TX(5.8G) - 802.11a		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	5123.03	64.22	5.94	35.40	44.00	61.56	74.00	-12.44	Pk
Vertical	5122.91	46.05	5.94	35.40	44.00	43.39	54.00	-10.61	AV
Vertical	11490.93	60.05	8.46	39.75	44.50	63.76	74.00	-10.24	Pk
Vertical	11490.93	43.37	8.46	39.75	44.50	47.08	54.00	-6.92	AV
Vertical	17236.03	53.06	10.12	38.80	44.10	57.88	68.20	-10.32	Pk
Horizontal	5167.02	59.61	5.94	35.18	44.00	56.73	68.20	-11.47	Pk
Horizontal	11490.99	59.35	8.46	38.71	44.50	62.02	74.00	-11.98	Pk
Horizontal	11490.99	42.55	8.46	38.71	44.50	45.22	54.00	-8.78	AV
Horizontal	17235.77	51.22	10.12	38.38	44.10	55.62	68.20	-12.58	Pk
middle Channel (5785 MHz)-Above 1G									
Vertical	5433.73	63.24	6.48	36.35	44.05	62.02	74.00	-11.98	Pk
Vertical	5433.69	43.74	6.48	36.35	44.05	42.52	54.00	-11.48	AV
Vertical	11570.88	60.67	8.47	37.88	44.51	62.51	74.00	-11.49	Pk
Vertical	11570.81	42.67	8.47	37.88	44.51	44.51	54.00	-9.49	AV
Vertical	17356.17	56.64	10.12	38.80	44.10	61.46	68.20	-6.74	Pk
Horizontal	4866.85	60.34	6.48	36.37	44.05	59.14	74.00	-14.86	Pk
Horizontal	4866.99	43.45	6.48	36.37	44.05	42.25	54.00	-11.75	AV
Horizontal	11570.81	63.77	8.47	38.64	44.50	66.38	74.00	-7.62	Pk
Horizontal	11570.80	44.18	8.47	38.64	44.50	46.79	54.00	-7.21	AV
Horizontal	17355.96	56.93	10.12	38.38	44.10	61.33	68.20	-6.87	Pk
High Channel (5825 MHz)-Above 1G									
Vertical	5243.80	61.92	7.10	37.24	43.50	62.76	68.20	-5.44	Pk
Vertical	11651.73	62.28	8.46	37.68	44.50	63.92	74.00	-10.08	Pk
Vertical	11651.64	43.11	8.46	37.68	44.50	44.75	54.00	-9.25	AV
Vertical	17472.99	60.23	10.12	38.80	44.10	65.05	68.20	-3.15	Pk
Vertical	17473.11	60.46	10.12	38.80	44.10	65.28	68.20	-2.92	Pk
Horizontal	5284.54	60.39	7.10	37.24	43.50	61.23	68.20	-6.97	Pk
Horizontal	11652.00	60.36	8.46	38.57	44.50	62.89	74.00	-11.11	Pk
Horizontal	11651.76	41.87	8.46	38.57	44.50	44.40	54.00	-9.60	AV
Horizontal	17473.85	58.60	10.12	38.38	44.10	63.00	68.20	-5.20	Pk
Horizontal	17474.09	58.18	10.12	38.38	44.10	62.58	68.20	-5.62	Pk

Note:"802.11a" mode is the worst mode.

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported. Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

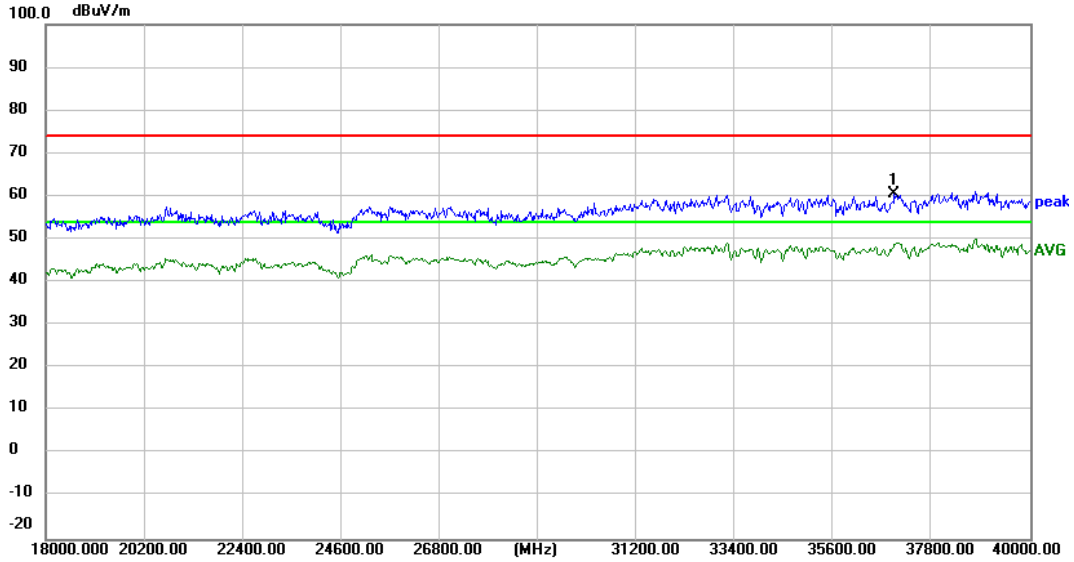
3.2.9 TEST RESULTS (18GHz-40GHz)

EUT：	Wireless POS	Model Name. ：	AF930
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX (5.2G)-802.11a ;TX (5.8G)-802.11a		

All the modulation modes have been tested, and the worst-case (802.11a mode) result was report as below:

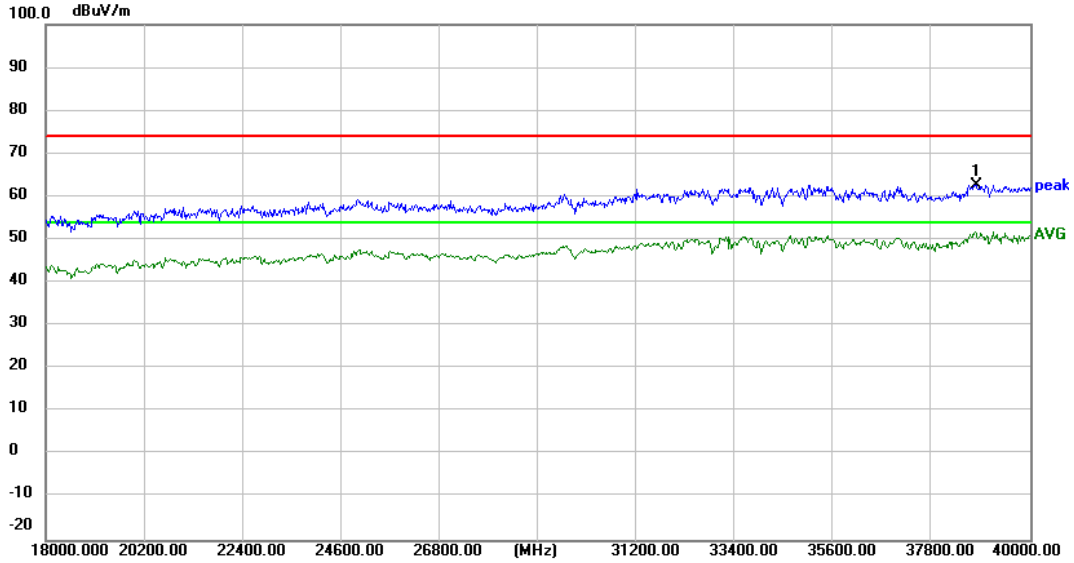
Low Channel (5180 MHz)-Above 1G

Horizontal



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
38790.000	52.43	10.34	62.77	68.2	-5.43	peak

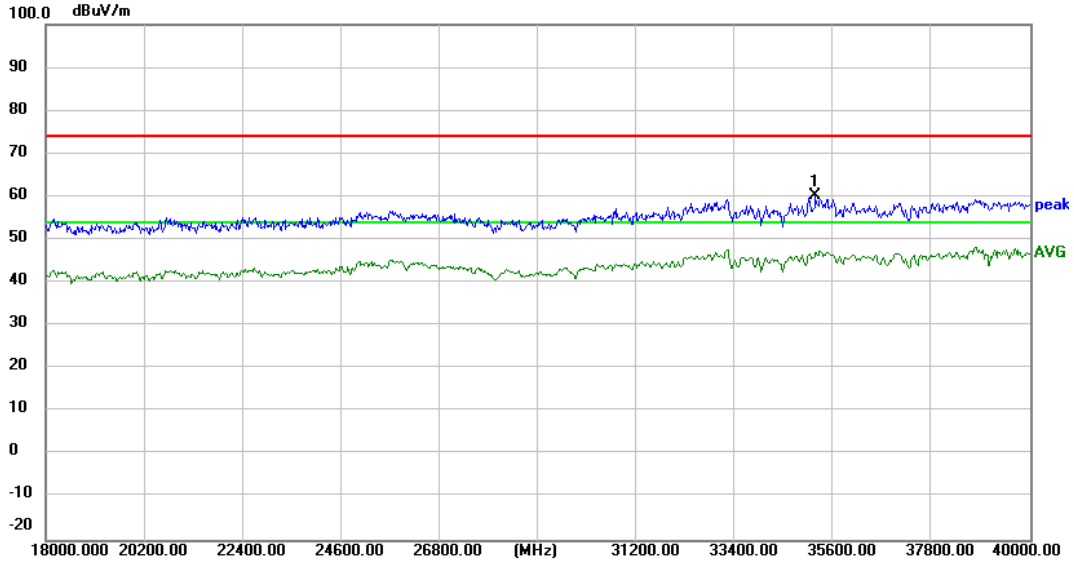
Vertical



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
38790.000	52.43	10.34	62.77	68.2	-5.43	peak

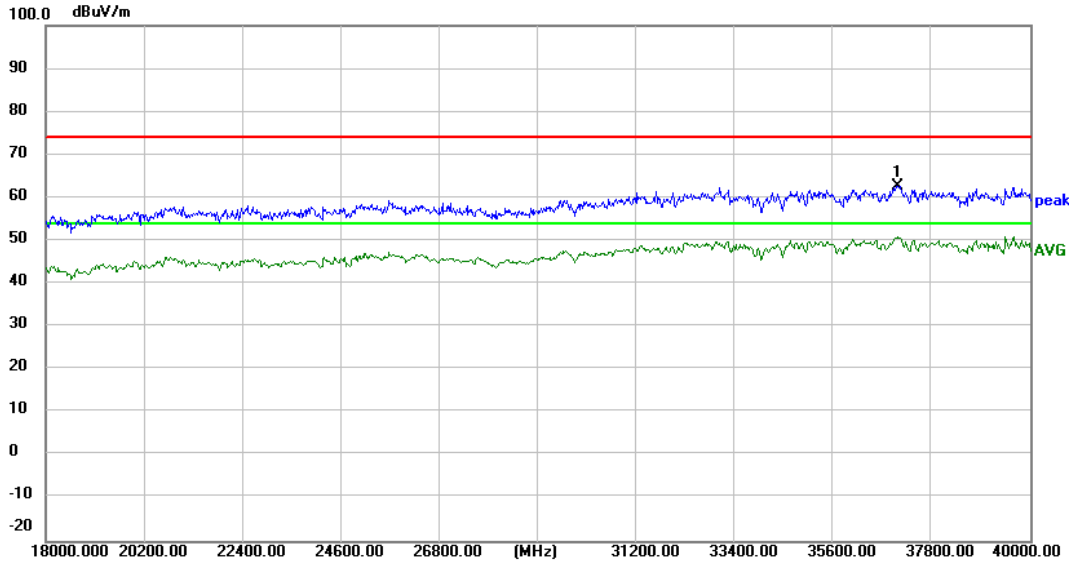
Mid Channel (5240 MHz)-Above 1G

Horizontal



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
35204.000	53.69	6.57	60.26	68.2	-7.94	peak

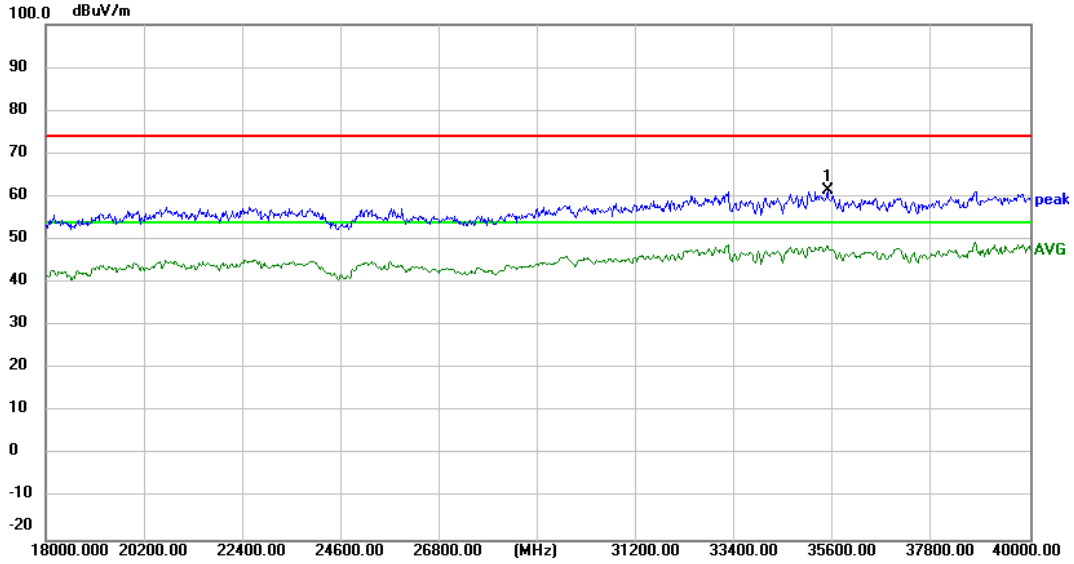
Vertical



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
37030.000	55.54	7.18	62.72	68.2	-5.48	peak

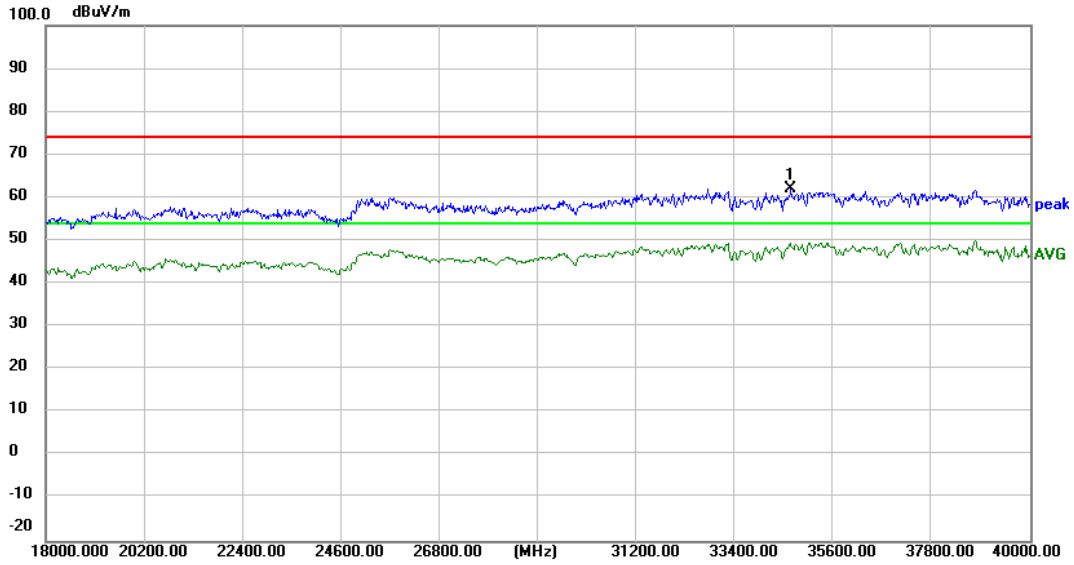
Low Channel (5745 MHz)-Above 1G

Horizontal



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
35468.000	55.29	6.22	61.51	68.2	-6.69	peak

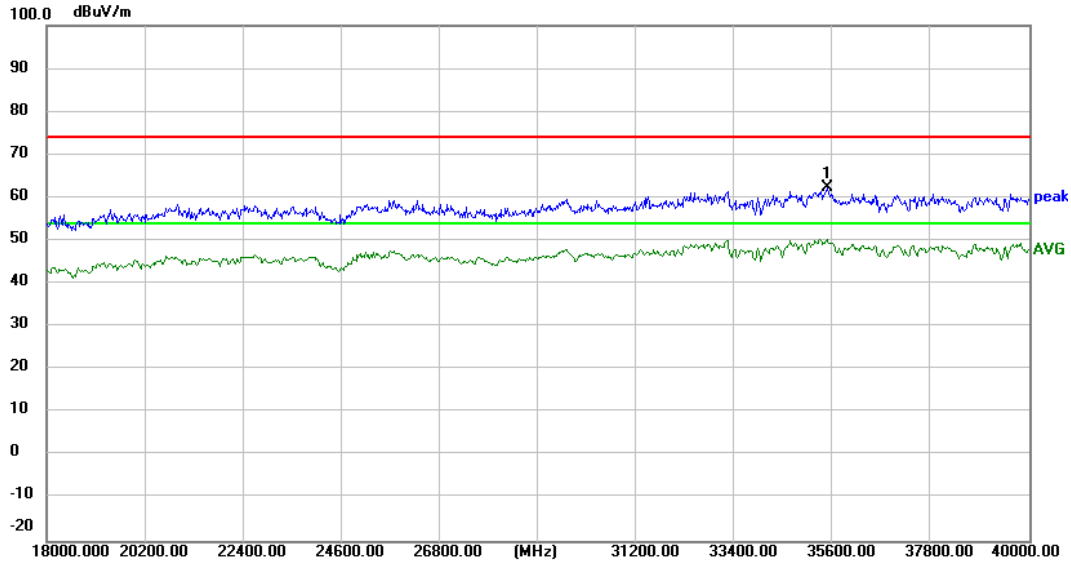
Vertical



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
34654.000	55.63	6.36	61.99	68.2	-6.21	peak

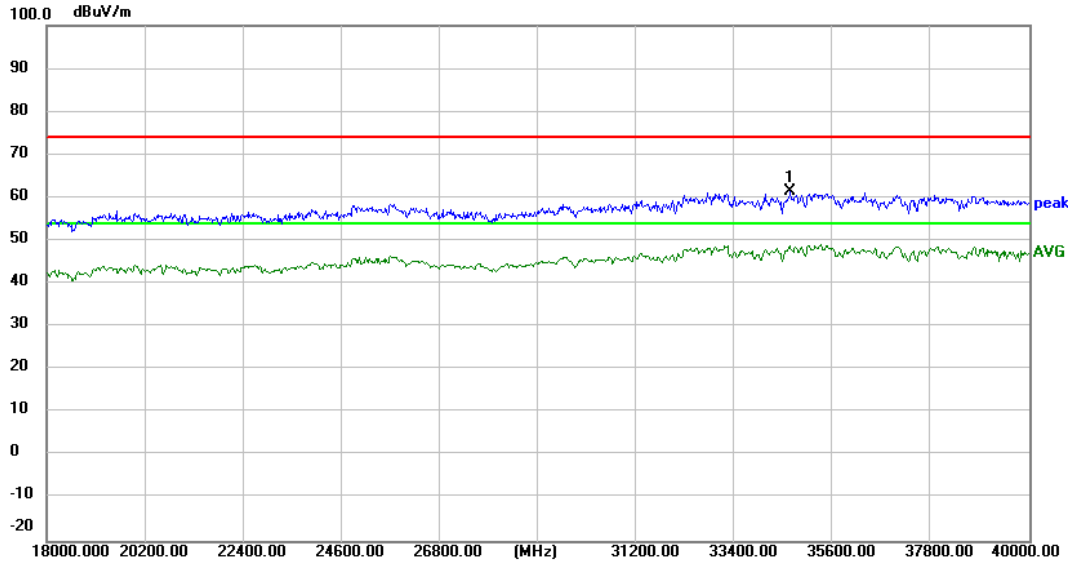
Low Channel (5825 MHz)-Above 1G

Horizontal



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Det.
35490.000	56.1	6.2	62.3	68.2	-5.9	peak	peak

Vertical



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
34654.000	55.13	6.36	61.49	68.2	-6.71	peak

3.2.10 Spurious Emission in Restricted Band 4.5GHz~5.150 GHz & 5.350GHz~5460GHz

EUT：	Wireless POS	Model Name. ：	AF930
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	WIFI 5.2G		

All the modulation modes have been tested, The report just record the worst data mode.

Frequency	Meter Reading	Cable Loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	dB/m	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
5.2G WIFI-802.11a Mode									
4500	56.75	5.2	35.6	44.2	53.35	74	-20.65	Pk	Horizontal
4500	46.36	5.2	35.6	44.2	42.96	54	-11.04	AV	Horizontal
4500	59.22	5.2	35.6	44.2	55.82	74	-18.18	Pk	Vertical
4500	46.33	5.2	35.6	44.2	42.93	54	-11.07	AV	Vertical
5150	63.36	5.36	35.66	44.22	60.16	74	-13.84	Pk	Horizontal
5150	52.23	5.36	35.66	44.22	49.03	54	-4.97	AV	Horizontal
5150	57.04	5.36	35.66	44.22	53.84	74	-20.16	Pk	Vertical
5150	38.18	5.36	35.66	44.22	34.98	54	-19.02	AV	Vertical
5350	65.60	5.68	35.68	44.22	62.74	74	-11.26	Pk	Vertical
5350	47.45	5.68	35.68	44.22	44.59	54	-9.41	AV	Vertical
5350	61.16	5.68	35.68	44.22	58.3	74	-15.7	Pk	Horizontal
5350	45.87	5.68	35.68	44.22	43.01	54	-10.99	AV	Horizontal

Note: (1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor

(2) “802.11a ” mode is the worst mode. When PK value is lower than the Average value limit, average don't record.

4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

According to FCC §15.407(a)

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz

(3)For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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4.2 TEST PROCEDURE

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/T, where T is defined in section II.B.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP

4.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.6 TEST RESULTS

EUT：	Wireless POS	Model Name ：	AF930
Temperature：	N/A	Relative Humidity：	N/A
Pressure：	N/A	Test Voltage ：	N/A
Test Mode ：	N/A		

The conducted Test data please refer to the report: S23033100205004 under the WWAN module Z400-H FCC ID: 2A9FT-Z400-H.

5. 26DB & 99% EMISSION BANDWIDTH

5.1 APPLIED PROCEDURES / LIMIT

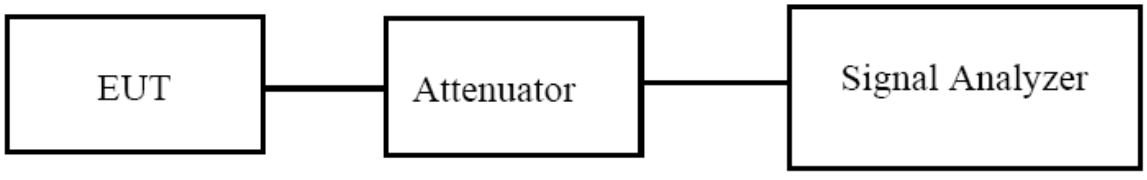
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power
is integrated over the full reference bandwidth.

5.2 TEST PROCEDURE

a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 · RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.



5.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.4 TEST RESULTS

EUT：	Wireless POS	Model Name ：	AF930
Temperature：	N/A	Relative Humidity：	N/A
Pressure：	N/A	Test Voltage ：	N/A
Test Mode ：	N/A		

The conducted Test data please refer to the report: S23033100205004 under the WWAN module Z400-H FCC ID: 2A9FT-Z400-H.

6. MINIMUM 6 DB BANDWIDTH

6.1 APPLIED PROCEDURES / LIMIT

According to FCC §15.407(e)
(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

6.2 TEST PROCEDURE

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 × RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Sweep = auto couple.

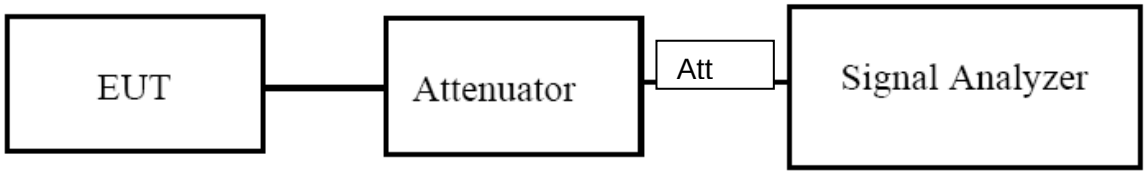
f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.6 TEST RESULTS

EUT：	Wireless POS	Model Name ：	AF930
Temperature：	N/A	Relative Humidity：	N/A
Pressure：	N/A	Test Voltage ：	N/A
Test Mode ：	N/A		

The conducted Test data please refer to the report: S23033100205004 under the WWAN module Z400-H FCC ID: 2A9FT-Z400-H.

7. MAXIMUM CONDUCTED OUTPUT POWER

7.1 PPLIED PROCEDURES / LIMIT

According to FCC §15.407

The maximum conduced output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5250~5350	250 mW or 11 dBm + 10 log B Note: The limit is the smaller of the two, "B" represents -26dB bandwidth.
5470~5725	250 mW or 11 dBm + 10 log B Note: The limit is the smaller of the two, "B" represents -26dB bandwidth.
5725~5850	1W

7.2 TEST PROCEDURE

· Method PM is Measurement using an RF average power meter. The procedure for this method is as follows:

a) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:

1) The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.

2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.

3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

b) If the transmitter does not transmit continuously, measure the duty cycle D of the transmitter output signal as described in 12.2.

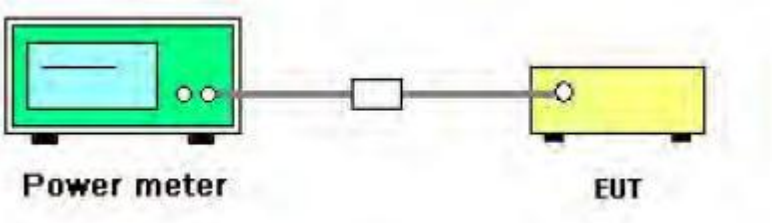
c) Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.

d) Adjust the measurement in dBm by adding [10 log (1 / D)], where D is the duty cycle {e.g., [10 log (1 / 0.25)], if the duty cycle is 25%}.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

EUT：	Wireless POS	Model Name ：	AF930
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1012 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 1/2/3		

The conducted Test data please refer to the report: S23033100205004 under the WWAN module Z400-H FCC ID: 2A9FT-Z400-H.

8. OUT OF BAND EMISSIONS

8.1 APPLICABLE STANDARD

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

8.2 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.

3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.

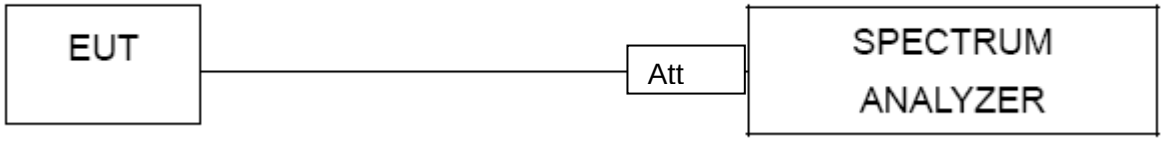
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

5. Repeat above procedures until all measured frequencies were complete.

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULTSA

The conducted Test data please refer to the report: S23033100205004 under the WWAN module Z400-H FCC ID: 2A9FT-Z400-H,since the WIFI 5G antenna gain is less than original module WIFI 5G antenna gain, so the test result also pass.

9. Frequency Stability Measurement

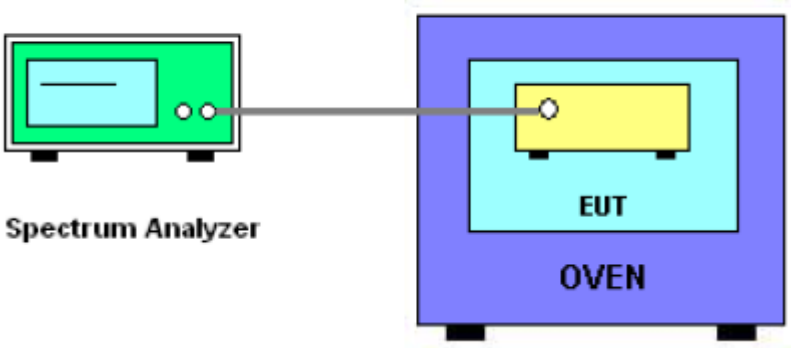
9.1 LIMIT

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

9.2 TEST PROCEDURES

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is -20°C~70°C.

9.3 TEST SETUP LAYOUT



9.4 EUT OPERATION DURING TEST

1. The EUT was programmed to be in continuously un-modulation transmitting mode.

9.5 TEST RESULTS

The conducted Test data please refer to the report: S23033100205004 under the WWAN module Z400-H FCC ID: 2A9FT-Z400-H.

10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

10.2 EUT ANTENNA

The EUT antenna is permanent attached FPC Antenna (3.22dBi). It comply with the standard requirement.

END OF REPORT